SSC CGL Dice Questions PDF

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Instructions
For the following questions answer them individually

Question 1

A Dice is thrown. Find the probability that the number showing on the dice is divisible by 2

A 1/4

B 1/6

C 1/2

D 1/3

E None of these

Answer: C

Explanation:
Sample spaces = {1, 2, 3, 4, 5, 6} n(S) = 6
Numbers divisible by 2 are 2, 4 and 6
n(E) =3
P(E) = 3/6=1/2

Question 2

In a single throw of two dice, find the probability of getting doublet?

A 2/6

B 3/5

C 6/7

D 1/6

E None of these

Answer: D

Explanation:
Sample spaces = {(1, 1), (1, 2) ... (1, 6)
(2, 1), (2, 2) ... (2, 6)
(3, 1), (3, 2) ... (3, 6)
(4, 1), (4, 2) ... (4, 6)
(5, 1), (5, 2) ... (5, 6)
(6, 1), (6, 2) ... (6, 6)}
n(S) = 36
Favorable cases to get doublets are = {(1, 1), (2, 2), (3, 3), (4, 4), (5, 5), (6, 6)}
n(E) = 6
Probability = n(E)/n(S) =6/36=1/6

Question 3

Two dice are tossed. Find the probability that the total is a prime number?

A 5/12

B 7/12

C 12/16

D 6/16

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E None of these

Answer: A

Explanation:
n(s)=((1,1),(1,2),.....(6,6)) n(s)=36
Favorable cases to get prime numbers as sum= {(1,1) (1,2) (1,4) (1,6) (2,1), (2,3) (2,5) (3,2), (3,4) (4,1) (4,3) (5,2) (5,6) (6,1), (6,5)}
n(A)= 15 P(A)=n(A)/n(s) =15/36=5/12

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Question 4

In simultaneous throw of a pair of a dice, find the probability that the sum of numbers shown on the two faces divisible by 5 or 6

A 13/36

B 1/2

C 1/6

D 1/36

E None of these

Answer: A

Explanation:
n(S) = 6×6=36
Event of getting a sum of numbers shown on the two faces divisible by 5 or 6 = [(1,4), (1,5), (2,3), (2,4), (3,2), (3,3), (4,1), (4,2),(4,6),(5,1), (5,5),(6,4), (6,6)]
n(E) =13 P(E) = n(E)/n(S) =13/36

Question 5

4 dice are thrown and the sum of the numbers noted is 10. Find the probability that all the numbers lie between 2 and 5 (both inclusive)?

A 0.275

B 0.175

C 0.250

D 0.125

Answer: D

Explanation:
Let the numbers thrown on 4 dice be a,b,c,d
a+b+c+d=10 a,b,c,d lie between 2 and 5.
Only case valid are {2,2,2,4},{2,2,3,3}
Total no. of cases in{2,2,2,4}=4
Total No. of cases in{2,2,3,3}=6
Total cases=10 Now, x+y+z+w=10
Where x,y,z,w lie between 1 and 6.
Each of x,y,z,w has to be at least 1.
So the valid cases of the above equation is ${}^{9}C_{3}$
But it will include 4 cases 0f {7,1,1,1}
Total cases= ${}^{9}C_{3}$-4=80

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Hence probability=10/80=1/8=0.125

Question 6

Find the probability of throwing a sum of less than 8 or at least 11 using 3 different dice.

A $\frac{143}{216}$

B $\frac{123}{216}$

C $\frac{73}{216}$

D $\frac{93}{216}$

Answer: A

Explanation:
P(X<8 || X>=11) = 1 - P(8) - P(9) - P(10)
P(8) => a+b+c = 8 and each of them must be at least 1 and not more than 6 => ${}^7C_2$ ways = 21 ways
P(9) => a+b+c = 9 and each of them must be at least 1 and not more than 6 => $({}^8C_2 - (3 * {}^2\,C_2)$ ways = 25 ways
P(10) => a+b+c = 10 and each of them must be at least 1 and not more than 6 => $({}^9C_2 - (3 * {}^3\,C_2))$ ways = 27 ways
Total possibilities = 21+25+27 = 73
P(X<8 || X>=11) = $1 - \frac{73}{216} = \frac{143}{216}$

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Question 7

Three dice are rolled. It is known that the sum obtained is 14. What is the probability that the first die shows a 5?

A 4/15

B 1/3

C 1/5

D 2/5

E None of the above

Answer: A

Explanation:
The possibilities for getting a sum of 14 are:
6, 6, 2 -> 3 arrangements possible
6, 5, 3 -> 6 arrangements possible
6, 4, 4 -> 3 arrangements possible
5, 5, 4 -> 3 arrangements possible

Starting with 5, for the set 6, 5, 3, there are 2 arrangements possible and for the set 5, 5, 4, there are 2 arrangements possible.
So, required probability = (2+2)/15 = 4/15

Question 8

2 dice are cast. What is the probability that both the dice show the same number?

A 1/2

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B 2/3

C 1/3

D 1/6

E None of the above

Answer: D

Explanation:
Number of favourable cases = 6
Total number of cases = 6*6 = 36
So, probability = 1/6

Question 9

4 dice are rolled. In how many ways can a sum of 22 be obtained?

A 4

B 2

C 26

D 16

E None of the above

Answer: D

Explanation:
There should be at least 2 6s. The other 9 can be obtained in 6+3, 5+4 = 2 ways
So, the combinations are 6+6+6+3, which can be arranged in 4!/3! = 4 ways
6+6+5+4, which can be arranged in 4!/2! = 12 ways.
So, the total number of ways = 4 + 12 = 16 ways

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Question 10

Two persons A and B play a game of dice in which each person throws a die on its turn and the person who throws 6 first wins the game. A starts the game. Find the probability that A wins.

A 5/11

B 6/11

C 7/11

D 4/11

Answer: B

Explanation:
P = P(A wins on 1st throw)+P(A wins on 3rd throw)+P(A wins on 5th throw)+.....and so on
P = (1/6)+(5/6*5/6*1/6)+..... = (1/6)/[1-(25/36)] = 6/11

Question 11

A fair dice containing six sides is thrown two times. What is the probability that the sum of the two rolls of dice is equal to 2?

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A $\frac{1}{6}$

B $\frac{1}{36}$

C $\frac{1}{18}$

D $\frac{1}{9}$

E $\frac{1}{12}$

Answer: B

Explanation:
The number of different permutations possible with two throws of dice is equal to 6*6=36
For the sum of the rolls to equal 2, both the rolls should be equal to 1.
Hence, the probability equals $\frac{1}{36}$

Question 12

Two dice are thrown and the numbers that appear on them are a and b respectively. Find the probability that the sum of a and b is 8.

A $\frac{5}{6}$

B $\frac{1}{6}$

C $\frac{5}{36}$

D $\frac{31}{36}$

Answer: C

Explanation:
Number of ways such that sum is 8 => (2,6), (3,5), (4,4), (5,3), (6,2)
=> 5 possible cases.
Total number of cases = 6*6 = 36
Probability = $\frac{5}{36}$

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Question 13

When two dice are rolled, what is the probability that the sum of numbers that appear is greater than 8?

A $\frac{13}{18}$

B $\frac{11}{18}$

C $\frac{5}{18}$

D $\frac{7}{18}$

Answer: C

Explanation:
Sum is greater than 8 => 9, 10, 11, 12 are possibilities.
Sum = 9 => (3,6), (6,3), (4,5), (5,4)
Sum = 10 => (4,6), (6,4), (5,5)

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Sum = 11 => (5,6), (6,5)
Sum = 12 => (6,6)
=> 10 possibilities
=> probability = $\frac{10}{36} = \frac{5}{18}$

Question 14

Find the smallest positive integer that should be multiplied to 2352 to make it a perfect square.

A 2

B 3

C 7

D 11

Answer: B

Explanation:
Let's factorize 2352 into its prime factors.
2352 = 16 * 3 * 49 = $2^4 * 3 * 7^2$.
To be a perfect square, the number should have prime factors with even indices. Hence, for 3 to have an even index, the number should be multiplied with 3.

Question 15

When three dice are rolled, find the probability that the sum of numbers that appear on them is equal to 10.

A 1/4

B 1/8

C 1/12

D 1/16

Answer: B

Explanation:
Let a, b and c be the numbers that appear on the 3 dice.
a + b + c = 10
Each of a, b and c are at least 1.
=> So, the equation changes to x + y + z = 7
This can be done in $^9C_2$ = 36 ways.

But, none of a, b or c can be more than 6. So, we need to remove cases where any of x, y or z is more than 5.
These cases are:
If (x, y, z) is (7, 0, 0). This can be done in $^3C_2$ = 3 ways.
If (x, y, z) is (6, 1, 0). This can be done in 3! ways = 6 ways.
Total number of ways = 9 ways

Number of required ways = 36 - 9 = 27

Total number of combinations = 6 * 6 * 6 = 216

=> Probability = $\frac{27}{216} = \frac{1}{8}$

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Question 16

If three distinct fair dice are rolled, in how many ways can a sum of 16 be obtained?

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A 3 ways

B 9 ways

C 18 ways

D 6 ways

Answer: D

Explanation:
A sum of 16 can be obtained in the following ways (the maximum on each dice is 6):

6 + 5 + 5
6 + 6 + 4

The first combination can be arranged among the three dice in 3!/2! = 3 ways
The second combination can be arranged in 3!/2! = 3 ways
So, total number of ways in which a sum of 16 can be obtained = 3 + 3 = 6 ways

Question 17

A man throws a dice and picks a card from a pack of 52 cards randomly. What is the probability that he gets an even number from the dice and a King?

A 1/13

B 1/26

C 1/39

D 1/52

E none of these

Answer: B

Explanation:
The probability of getting an even number from the dice = no. of favorable outcomes(2,4,6)/ total number of outcomes(1,2,3,4,5,6) = P(e) = 3/6 = 1/2
The probability of getting a King from a pack of 52 cards = P(k) = no. of favorable outcomes (4 Kings)/ total number of outcomes(52 cards) = 4/52 = 1/13
Since, both events are independent, the required probability = P(e) x P(k) = 1/2 x 1/13 = 1/26

Question 18

What is the probability of getting an odd number when a dice is thrown twice?

A 1/4

B 1/3

C 1/2

D 3/4

E none of these

Answer: D

Explanation:
Let P(O1) be the probability of getting an odd no. when the dice is thrown first and P(O2) when the dice is thrown for the second time.
We need to find the probability that either the first or second time the outcome would be an odd number i.e. P(O1 U

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O2)
Since P(O1) and P(O2) are independent, P(O1 U O2) = P(O1) + P(O2) - P(O1)P(O2) = 3/6 + 3/6 - 3/6 x 3/6 = 3/4

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Question 19

When a dice is thrown twice, what is the probability that the sum of the numbers obtained is 6 ?

A 1/12

B 1/18

C 1/36

D 1/9

E 5/36

Answer: E

Explanation:
favorable outcomes = E = (1,5) (5,1) (2,4) (4,2) (3,3)
Thus, no of favorable outcomes = n(E) = 5
Total no. of outcomes = n(S) = 6 x 6 = 36
Thus, the required probability = n(E)/n(S) = 5/36

Question 20

Two dices are thrown simultaneously, what is the probability that the sum of the numbers that turn up is less than 9?

A $\frac{5}{18}$

B $\frac{2}{3}$

C $\frac{25}{36}$

D $\frac{13}{18}$

Answer: D

Explanation:
When two dices are thrown simultaneously, the total possible outcomes are 6*6 = 36
Instead of calculating the outcomes where the sum is less than 9, we can easily calculate the cases where the sum is greater than or equal to 9. Such cases are
(5,4), (4,5), (6,3), (3,6), (5,5), (6,4), (4,6), (6,5), (5,6), (6,6)
So there are 10 cases. Hence the probability that sum is greater than or equal to 9 is $\frac{10}{36} = \frac{5}{18}$
So the probability that sum is less than 9 is 1- $\frac{5}{18} = \frac{13}{18}$

Question 21

A dice is rolled twice, what is the probability of getting 3 at least once?

A 25/36

B 11/36

C 13/36

D 23/36

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E None of these

Answer: B

Explanation:
The probability of getting 3 at least once = 1 - probability of not getting 3 in any of the throws.
$= 1 - \frac{5}{6} * \frac{5}{6}$
= 1- 25/36 = 11/36
So the correct option to choose is B- 11/36

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Question 22

A dice is thrown twice. What is the probability that sum of the numbers which turn up is 6.

A 7/36

B 5/36

C 1/4

D 1/9

E none of these

Answer: B

Explanation:
Total possible cases = 6*6 =36
Favorable cases = (1,5), (2,4),(3,3),(4,2),(5,1)
So the favorable cases are 5.
Hence the required probability is 5/36

Question 23

Two dice are rolled simultaneously. What is the probability that none of the dice shows up a four?

A $\frac{5}{6}$

B $\frac{11}{36}$

C $\frac{1}{2}$

D $\frac{25}{36}$

Answer: D

Explanation:
Each of the dice has to show up a number other than 4.
So there are five possible outcomes for each of the dice.
So number of favourable ways = 5*5 = 25.
Total number of ways = 6*6 = 36.
Probability = 25/36.

Question 24

Two fair dice are rolled simultaneously. What is the probability that atleast one of the dice shows up a three?

A $\frac{5}{6}$

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B $\frac{11}{36}$

C $\frac{1}{2}$

D $\frac{25}{36}$

Answer: B

Explanation:
We can use the 6x6 matrix to find out the number of ways in which atleast one of the dice shows up a three.
The favourable cells are as highlighted in green.

11	12	13	14	15	16
21	22	23	24	25	26
31	32	33	34	35	36
41	42	43	44	45	46
51	52	53	54	55	56
61	62	63	64	65	66

Thus the number of favourable ways = 11.
Probability = 11/36.

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Question 25

When two dice are thrown simultaneously what is the probability that the product obtained by multiplying the outcomes is an odd number?

A 2/5

B 3/4

C 1/2

D 1/4

E none of these

Answer: D

Explanation:
For the product to be an odd number, the outcomes of both the dice should be odd.
The favorable Event = E = {(1,1), (1,3), (1,5), (3, 5), (5,3), (5,1), (3,1), (3,3), (5,5) }
Total number of possible outcomes = 6 x 6 = 36
Thus, the required probability = 9/36 = 1/4

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